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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/713,190	11/17/2003	Robert L. Horn	A7995.0018/P018	9562
24998	7590	03/21/2006		
DICKSTEIN SHAPIRO MORIN & OSHINSKY LLP 2101 L Street, NW Washington, DC 20037			EXAMINER SCHLIE, PAUL W	
			ART UNIT 2186	PAPER NUMBER
DATE MAILED: 03/21/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/713,190	Applicant(s) HORN ET AL.	
	Examiner Paul W. Schlie	Art Unit 2186	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 February 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☒ Claim(s) 7 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-12 have been examined as amended.

Response to Arguments

2. Applicant's arguments and/or corresponding amendments filed 2/21/06, with respect to the objection to the specification has been fully considered and are persuasive, and thereby correspondingly withdrawn.
3. Applicant's remaining arguments and/or corresponding amendments filed 2/21/06 have been fully considered but they are not persuasive and/or moot.

As per the rejection of claim 7 and 8 per the first paragraph of 35 U.S.C 112, in light of the clarified amended specification and amended claim 7 (considered part of the disclosure), as no method to enable one of ordinary skill in the art without likely undue experimentation has been disclosed to enable the determination and control within an environment composed of a plurality of virtualizers, whether said first or second virtualizer forwards said write data and command to said first RAID controller (presuming it's not intended that said write data and command be forwarded by both said virtualizers to the same first RAID controller in response to a single corresponding host write data command); although the basis of the rejection has been correspondingly amended, all claims citing a plurality of virtualizers and their dependents, comprising claims 7-9 and 11-12 are correspondingly rejected per 35 U.S.C. 112 first paragraph.

As per the rejection of claims 1-12, based upon that taught by Blumenau et al. per 35 U.S.C. 102; upon further review of the reference in light of the clarified amended specification, as it is clear that a storage controller (depicted in figure 1 element 27) may

be distinct from RAID controllers (as may be comprised within figure 1 element 26 depicting storage volumes as may be composed from RAID configured storage devices in further view of column 7 lines 51-65 clarifying that a storage controller as taught is distinct although may be utilized in conjunction with storage devices utilizing RAID techniques) as taught by Blumenau et al. and thereby encompasses that claimed; and is correspondingly clearly inherent that such a storage controller comprises the means (as may be named a command mapper if desired) to parse and subsequently map a received data request into at least one secondary data command (such as a read) to be sent to a downstream storage element via a RAID controller (as may even be arguably alternatively embodied within that depicted as elements 37/38 of figure 1 as may be desired, as the utility and purpose of the disclosed RAID techniques as taught are not dependant on its embodiment within either elements 37/38 or within element 26). Therefore, although the rejection has been correspondingly clarified, it is sustained.

Claim Objections

4. Claim 7 is objected to because of the following informalities: The third element of the claim appears to incorrectly spell "storing" as "storage". Correction is required.

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any similar errors the applicant may become aware of.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the

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art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 7-9 and 11-12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter that was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

As per claims 7-9 and 11-12, no method to enable one of ordinary skill in the art without likely undue experimentation has been disclosed to enable the determination and control within an environment composed of a plurality of virtualizers, whether said first or second virtualizer forwards said write data and command to said first RAID controller (presuming it's not intended that said write data and command be forwarded by both said virtualizers to the same first RAID controller in response to a single corresponding host write data command, as disclosed within claim 7).

Corrective action is required, however the applicant is reminded that no new matter may be introduced not supported by the original disclosure.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

8. Claims 1-8, 10- are rejected under 35 U.S.C. 102(a) as being anticipated by Blumenau et al. (6,421,711).

As per claims 1-8, 10-11, Blumenau et al. teaches a storage controller (i.e. virtualizer) comprising: a cache, and methods and/or means either explicitly cited or being inherent as necessary (inclusive of a task manager) to coordinate the acceptance of read and/or write requests from a host computer through one or more target ports; where a write request will locally cache the data to be written, and request the data be written to one or more potentially redundantly paired RAID storage subsystems (or storage controllers as may be inherently interconnected from one controller's initiator port to another's target port, thereby forming a mirrored redundant controller topology); where a read request will return the requested data if locally cached, or request the data be read from one or more RAID storage subsystems (or potentially through an intervening topology of storage controllers if desired) through a corresponding initiator port, where upon receipt will locally cache the received data, and forward it to the corresponding requesting requester, potentially being the originating host; where the said RAID storage subsystems which may comprise data composing one or more virtual volumes (see figure 1-2 and 37-40, column 3 lines 33-65, column 7 lines 22-65, and column 8 lines 24-39); where although not explicitly taught that a mirrored redundant topology of storage controllers may be configured to always forward write requests to mirrored redundantly interconnected storage controllers thereby assuring that their caches also contain the latest written data, nor how potential write ambiguities may be resolved if then interconnected to the same target storage subsystem, it is considered inherently taught by reference to such a system within which such a behavior would be inherently required (see column 9 lines 6-17), and/or in view that corresponding

limitations are not given patentable weight as they are not considered to be operatively enabled by the disclosure as cited in the above U.S.C 35 112 first paragraph rejection of the same.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 9 and 12 rejected under 35 U.S.C. 103(a) as being unpatentable over Blumenau et al. (6,421,711) in further in view of Mattis et al. (6,128,623).

As per claims 9 and 12, being dependant on above claims 8 or 11 respectively, Blumenau et al. does not teach that multiple independently received potentially non-sequential sequence of writes may be cached and coalesced into a potentially more efficient sequence of writes to said disk subsystem, nor that reads may be potentially more efficiently satisfied by caching speculative read-ahead access requests. However Mattis et al. teaches that multiple independently received potentially non-sequential sequence of writes may be cached and coalesced into a potentially more efficient sequence of writes to said disk subsystem, and that reads may be potentially more efficiently satisfied by caching speculative read-ahead access requests (see abstract, figure 2, column 17 lines 23-30, and column 15-16 lines 55-32). Therefore it would be obvious to combine that taught by Blumenau et al. with that taught by Mattis et al.

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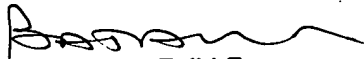
relevant to the claims, for the benefit of improving the efficiency of such a storage system.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul W. Schlie whose telephone number is 571-272-6765, or whose email address is [paul.schlie@uspto.gov]. The examiner can normally be reached on Mon-Thu 8:00-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Kim can be reached on 517-272-4182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


PIERRE BATAILLE
PRIMARY EXAMINER
3/17/06